# UA01
# Department of the Environment – Capital

## *Capital Budget Summary*

### Grant and Loan *Capital Improvement Program*
**($ in Millions)**

| Program | 2017 Approp. | 2018 Approp. | 2019 Request | 2020 Estimate | 2021 Estimate | 2022 Estimate | 2023 Estimate |
|---|---|---|---|---|---|---|---|
| Maryland Water Quality Revolving Loan Fund | $123.208 | $336.792 | $306.600 | $150.000 | $150.000 | $150.000 | $150.000 |
| Maryland Drinking Water Revolving Loan Fund | 20.997 | 129.003 | 32.830 | 30.000 | 32.000 | 32.000 | 32.000 |
| Bay Restoration Fund – Wastewater Projects | 80.000 | 120.000 | 70.000 | 75.000 | 75.000 | 75.000 | 80.000 |
| Septic System Upgrade Program | 14.000 | 15.000 | 15.000 | 15.000 | 15.000 | 15.000 | 15.000 |
| Biological Nutrient Removal Program | 14.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Water Supply Financial Assistance Program | 2.480 | 1.944 | 3.303 | 2.500 | 2.500 | 2.500 | 2.500 |
| Hazardous Substance Clean-Up Program | 0.200 | 0.500 | 0.500 | 1.000 | 1.000 | 1.000 | 1.000 |
| Mining Remediation Program | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| Energy-Water Infrastructure Program | 16.200 | 8.000 | 8.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Total** | **$271.585** | **$611.739** | **$436.733** | **$274.000** | **$276.000** | **$276.000** | **$281.000** |

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| Fund Source | 2017 Approp. | 2018 Approp. | 2019 Request | 2020 Estimate | 2021 Estimate | 2022 Estimate | 2023 Estimate |
|---|---|---|---|---|---|---|---|
| PAYGO GF | $0.200 | $0.500 | $0.500 | $1.000 | $1.000 | $1.000 | $1.000 |
| PAYGO SF | 210.086 | 187.101 | 220.280 | 217.270 | 219.270 | 219.270 | 224.270 |
| PAYGO FF | 44.319 | 42.614 | 43.300 | 43.300 | 43.300 | 43.300 | 43.300 |
| GO Bonds | 16.980 | 21.524 | 22.653 | 12.430 | 12.430 | 12.430 | 12.430 |
| Revenue Bonds | 0.000 | 360.000 | 150.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Total** | **$271.585** | **$611.739** | **$436.733** | **$274.000** | **$276.000** | **$276.000** | **$281.000** |

FF: federal funds
GF: general funds
GO: general obligation
PAYGO: pay-as-you-go
SF: special funds

Note: The fiscal 2018 funding for the Bay Restoration Fund – Wastewater Projects reflects $60.0 million in revenue bond authorization in order to defray $11.0 million in fiscal 2017 and $49,089,000 in GO bond authorizations for the Biological Nutrient Removal Program. Going forward, the Biological Nutrient Removal Program is funded through Bay Restoration Fund – Wastewater Projects.

# *Summary of Issues*

***Regulations and Administration Bills Reduce Septic System Upgrades:*** The Maryland Department of the Environment (MDE) adopted a new septic system regulation that became effective on November 24, 2016. The purpose of the regulation was to remove the universal requirement that best available technology (BAT) systems be installed outside the Critical Area for all new construction or replacement septic systems. In addition, two Administration bills – SB 314 and HB 361 (Bay Restoration Fund (BRF) – Fee Exemption, Disbursements, and Financial Assistance (Septic Stewardship Act of 2018)) – have been introduced in the 2018 legislative session. The bills would, among other actions, reduce from 60% to 50% the amount that is available for septic system upgrades from the BRF – Septic Account. **The Department of Legislative Services (DLS) recommends that MDE comment on the plan for meeting Chesapeake Bay restoration nutrient reduction goals for the septic sector given the adoption of the regulations removing the universal requirement that BAT systems be installed outside the Critical Area and the proposed reduction of BRF – Septic Account revenue via SB 314 and HB 361.**

***BRF Uses Continue to Expand:*** The original goal of the BRF to upgrade the 67 major wastewater treatment plants (WWTP) to enhanced nutrient removal (ENR) technology almost has been met, and in the meantime, the uses of the BRF have been expanded to include septic system upgrades, stormwater management, combined sewer overflow (CSO) and sewer abatement projects, nutrient reduction purchases, and Biological Nutrient Removal (BNR) upgrades. It is unclear whether the changes to the BRF allow for cost effective use of the BRF to meet Chesapeake Bay restoration goals. **DLS**

**recommends that MDE comment on the future year allocation plans for the BRF, whether it will continue to be an effective source of funding even though spread across so many diverse uses, and whether it is still considered to be sufficiently focused on Chesapeake Bay restoration in order to meet the needs of the overall Chesapeake Bay restoration funding plan.**

## *Summary of Updates*

***Energy-Water Infrastructure Program Funding and Project Status:*** The Energy-Water Infrastructure Program received appropriations of $16.2 million in fiscal 2017, $8.0 million in fiscal 2018, and is now budgeted to receive $8.0 million in fiscal 2019. Almost half of the fiscal 2017 funding is encumbered. The fiscal 2018 funding has not been encumbered or expended because the Memorandum of Understanding (MOU) between the Maryland Energy Administration (MEA) and MDE has not been signed, although projects have been selected. Fiscal 2019 projects will be solicited once the fiscal 2019 final funding amount has been determined.

## *Summary of Recommended PAYGO Actions*

1. Concur with Governor's allowance for the Water Quality Revolving Loan Fund.

2. Concur with Governor's allowance for the Hazardous Substance Clean-Up Program.

3. Concur with Governor's allowance for the Drinking Water Revolving Loan Fund.

4. Concur with Governor's allowance for the Bay Restoration Fund – Wastewater Projects.

5. Concur with Governor's allowance for the Bay Restoration Fund – Septic Systems.

6. Concur with Governor's allowance for the Energy-Water Infrastructure Program.

## *Summary of Recommended Bond Actions*

1. Maryland Drinking Water Revolving Loan Program

   Approve the authorization for the Drinking Water Revolving Loan Fund.

2. Maryland Water Quality Revolving Loan Fund

   Approve the authorization for the Water Quality Revolving Loan Fund.

3. Mining Remediation Program

   Approve the authorization for the Mining Remediation Program.

4. Water Supply Financial Assistance Program

   Approve the authorization for the Water Supply Financial Assistance Program.

5. SECTION 2 – Maryland Department of the Environment – Water Supply Financial Assistance Program

   Approve the de-authorization for the Water Supply Financial Assistance Program.

# *Program Description*

The MDE capital program is comprised of the Water Quality Revolving Loan Fund (WQRLF), the Drinking Water Revolving Loan Fund (DWRLF), the BRF – Wastewater Projects, the BRF – Septic System Projects, the Water Supply Financial Assistance Program, the Hazardous Substance Clean-Up Program, the Mining Remediation Program, and the continuation of a new program – the Energy-Water Infrastructure Program. The BNR Program has been folded into the BRF – Wastewater Projects. The programs in MDE's fiscal 2019 allowance address MDE's goals of protecting water resources and ensuring safe and adequate supplies of drinking water, managing air quality and emissions for maximum protection of human health and the environment, and reducing Maryland citizens' exposure to hazards. Descriptions of MDE's eight current programs follow.

- ***WQRLF:*** The WQRLF was created to provide low-interest loans to counties and municipalities to finance water quality improvement projects. The fund was established by the federal government in the Clean Water Act of 1987 and by the State in Sections 9-204 and 9-1604 of the Environment Article to replace the federal construction grants program that was phased out. Projects eligible for funding include WWTPs; failing septic systems; and nonpoint source projects, such as urban stormwater control projects. The federal Act requires a 20% State match. For fiscal 2019, at least 10% of the federal funding must be used for Green Reserve projects – water efficiency, energy efficiency, and stormwater projects – and no more than $13.2 million may be used for loan forgiveness/grants. WQRLF projects are prioritized based on an Environmental Protection Agency (EPA)-approved Integrated Project Priority System. The priority system for WQRLF projects consists of a system for evaluating, rating, and ranking of both point source and nonpoint source water quality projects. The Integrated Project Priority System originally was revised by MDE and approved by EPA in 2010 to target financial assistance to projects that help meet Maryland's Phase I Watershed Improvement Plan (WIP) to address the Chesapeake Bay Total Maximum Daily Load (TMDL). The most recent revision was approved by EPA on November 10, 2016. The Integrated Project Priority System focuses on water quality or public health benefits, compliance, cost efficiency, and sustainability; the most recent revision weights cost efficiency more heavily than it was previously weighted, among other changes. In accordance with this system, the projects are rated and ranked by

MDE's Water Quality Financing Administration and are listed in ascending ranking order on the Project Priority List. Through January 1, 2018, the program has executed $2.329 billion in loans, loan forgiveness, and grants, including American Recovery and Reinvestment Act of 2009 (ARRA) funding.

- ***DWRLF:*** The DWRLF was established in accordance with a federal capitalization grant approved by the U.S. Congress in 1996 in anticipation of future federal capitalization grants. This program was authorized by the General Assembly to provide loans to counties and municipalities to finance water supply improvements and upgrades. In accordance with the federal law, these funds may also be loaned to private parties. The federal Act requires that a minimum of 20% of State matching funds for each year's federal capitalization grant be deposited into the fund. For fiscal 2019, at least 20% and no more than 50% of the federal funding must be used for loan forgiveness or grants. Similar to the WQRLF, DWRLF projects are prioritized based on an EPA-approved Drinking Water Project Priority System that focuses on many criteria, the most important being the public health benefit. Through January 1, 2018, the program has executed approximately $447.3 million in loans, loan forgiveness, and grants including ARRA funding.

- ***BRF – Wastewater Projects:*** The BRF (Chapter 428 of 2004) was created to address the significant decline in Chesapeake Bay water quality due to overenrichment of nutrients, such as phosphorus and nitrogen. This dedicated fund, financed in large part by WWTP users, initially was used to provide grants to local governments to upgrade Maryland's 67 major WWTPs with ENR technology as part of reducing an additional 7.5 million pounds of nitrogen per year in order to reach Maryland's commitment under the TMDL as implemented by the WIP. Chapter 150 of 2012 increased the BRF fee beginning July 1, 2012, in order to address a funding shortfall that would have made it very difficult to complete the upgrades to the 67 major publicly owned WWTPs by calendar 2017, as required by the WIP. Chapter 150 also made several other changes, such as establishing additional uses for the fund beginning in fiscal 2018. Chapter 153 of 2015 (Environment – BRF – Use of Funds) added to the authorized uses of the BRF, beginning in fiscal 2016, by providing funding for up to 87.5% of the cost of projects relating to CSO abatement, rehabilitation of existing sewers, and upgrading conveyance systems, including pumping stations; this funding authority previously existed between fiscal 2005 and 2009, capped at $5 million annually. The bill also altered the priority of BRF funding beginning in fiscal 2018 by making grants for septic system upgrades, stormwater management, and CSO and sewer abatement projects of equal priority, with funding decisions made on a project-specific basis. The funding allocation is up to 100% for eligible capital costs related to planning, design, and construction of ENR technology at targeted WWTPS; up to 87.5% for CSO abatement, rehabilitation of existing sewers and upgrading conveyance systems, including pumping stations; and up to 50% for stormwater project costs. ENR takes water that has gone through the BNR process and further refines the effluent physically, biochemically, or chemically to an average level of 3.0 milligrams per liter (mg/L) nitrogen and 0.3 mg/L phosphorus. Beginning in fiscal 2018, the funding is now being used to upgrade WWTPs to BNR, which biologically removes the total nitrogen to an average level of 8 mg/L and the total phosphorus to an average level of 2 mg/L prior to discharging the water into the receiving waters. Revenue from this fund also supports upgrades to septic systems. A portion of the

funding ($7 million in the fiscal 2019 allowance) is budgeted in the MDE operating budget for operations and maintenance of WWTPs upgraded to ENR status.

- ***BRF – Septic System Projects*:** The BRF includes a separate program to fund the replacement of failing septic systems. This program is funded as part of the BRF legislation by a fee on users of septic systems and sewage holding tanks, of which 60% of the revenue is allocated to MDE for the Septic System Upgrade Program and 40% to the Maryland Department of Agriculture for the Cover Crop Program. While Chapter 280 of 2009 (Chesapeake Bay Nitrogen Reduction Act of 2009) already required BAT for new and replacement systems in the Chesapeake Bay Critical Area or the Atlantic Coastal Bays Critical Area, new regulations finalized in September 2012 expanded septic system upgrade requirements to include the BAT for all septic systems serving new construction in the Chesapeake and Atlantic Coastal Bays watersheds and in the watershed of any nitrogen impaired water body. MDE provides grants to upgrade failing systems and holding tanks with the BAT for nitrogen removal. Overall, the program gives priority to projects that involve failing systems in environmentally sensitive areas that are ready to proceed. The program is administered by county governments or other parties; contractors conducting the septic system upgrades are directly reimbursed for their work. Applications are prioritized as follows: (1) failing septic systems or holding tanks in the Critical Areas; (2) failing septic systems or holding tanks outside the Critical Areas; (3) nonconforming septic systems in the Critical Areas; (4) nonconforming septic systems outside of the Critical Areas; (5) other septic systems in the Critical Areas, including new construction; and (6) other septic systems outside the Critical Areas, including new construction. Homeowners with household income less than or equal to $300,000 per year are eligible for 100% grants of the BAT cost, and all other homeowners are eligible for grants covering 50% of the cost. Nonprofit entities are eligible for 100% grants. For-profit businesses are eligible for 50% grants. Chapter 379 of 2014 (BRF – Authorized Uses – Local Entities) required that up to 10% of the funds in the Septics Account of the BRF be distributed to a local public entity delegated by MDE – local health departments – to cover reasonable costs associated with implementation of MDE regulations pertaining to septic systems that use the BAT for nitrogen removal. MDE adopted a new septic system regulation that became effective on November 24, 2016, which removes the universal requirement that BAT for removal of nitrogen systems be installed outside the Chesapeake and Atlantic Coastal Bays Critical Area for all new construction or replacement septic systems.

- ***Water Supply Financial Assistance Program:*** The General Assembly created the Water Supply Financial Assistance Program in 1982 to address the deteriorating condition of the State's water supply infrastructure and the lack of adequate financing available to local governments to upgrade water supply systems. This program provides grants to assist small communities in the acquisition, construction, equipping, rehabilitation, and improvement of publicly owned water supply facilities. The State may provide up to 87.5% of total eligible project costs (not to exceed $1.5 million per project), and a minimum 12.5% local match is required. In recent years, all assistance has been in the form of grants rather than loans. This program is often used in conjunction with other sources of federal and State financial assistance (such as the DWRLF) to achieve project affordability.

- ***Hazardous Substance Clean-Up Program:*** The Hazardous Substance Clean-Up Program provides funds for cleaning up uncontrolled waste sites listed on the federal National Priorities List (Superfund) and other uncontrolled waste sites within the State that do not qualify for federal funding through the Superfund program. The State provides up to 100% of the costs of cleanup for the projects not included on the National Priorities List. At orphan sites, sites lacking a financially viable responsible party to pay for the cleanup, the State provides 100% of the cost of the preliminary site assessment. In all cases, the program seeks cost recovery when possible from responsible parties. The program also provides the State's share (10%) of remediation costs for federal Superfund orphan sites with the remainder provided through the federal share (90%).

- ***Mining Remediation Program:*** The Mining Remediation Program was a new addition to MDE's capital program for fiscal 2015. Where there is no financially viable responsible party, the program provides funding for remediation of abandoned lands and waters impacted by inadequate coal mining reclamation practices prior to the passage of the federal Surface Mine Control and Reclamation Act of 1977. The program works through the Maryland Abandoned Mine Land Division. Projects include reclamation of surface mine high walls and pits, stabilization of landslides, restoration of stream banks to address flooding, extinguishing underground coal mine and coal refuse fires, stabilization of coal refuse piles, water supply replacement, stabilizing buildings and roads that are impacted by underground mine subsidence, and acid mine drainage treatment projects.

- ***Energy-Water Infrastructure Program:*** The Energy-Water Infrastructure Program was a new addition to MDE's capital program for fiscal 2017. The program is funded with money from the agreement by which, under Public Service Commission (PSC) Order 86372, Dominion Cove Point is allowed to construct a 130-megawatt nameplate capacity electric generating station at the existing liquefied natural gas terminal site in Calvert County near Cove Point. A total of $40.0 million was made available as a result of PSC Order 86372, of which the Energy-Water Infrastructure Program's current and projected authorizations represent $32.2 million of the $40.0 million. As part of the agreement, funding is being used – per the right to fund cost-effective energy efficiency and conservation programs, projects, or activities – to provide grants to water and WWTP owners to develop energy-efficient and resilient projects in order to reduce operating costs and ultimately pass savings on to consumers by lowering the rate of future user fee increases. Project selection is based on ready-to-construct project applications received. Funding is provided as 100% grants not to exceed $1.0 million per project for energy-efficient equipment (such as replacement of aging pumps with new energy-efficient ones) and $3.0 million per project for combined heat and power projects (such as using methane from digesters to generate heat/power or by developing wind power to generate power). The goal is to achieve energy efficiency/reduction levels of 20% relative to the old equipment being replaced as tracked through an energy audit.

# *Performance Measures and Outputs*

In January of each year, MDE solicits interest for funding from the WQRLF and the DWRLF. The solicitation of interest is available to local governments and private drinking water providers. MDE's funding solicitation for fiscal 2019 funding is reflected in **Exhibit 1.** MDE's solicitation distinguishes between clean water and drinking water type projects, with the majority of funding solicited for clean water projects. As reflected in the exhibit, the funding demand of $1.4 billion exceeds the $339.4 million for the WQRLF and the DWRLF in the fiscal 2019 allowance.

**Exhibit 1**
**MDE Capital Program Funding Solicitation for Revolving Loan Funds**
**Fiscal 2019**
**($ in Millions)**

| Project Type | Applications | Total Project Cost | Funding Requested from MDE |
|---|---|---|---|
| **Clean Water** | | | |
| Secondary Treatment | 3 | $409.815 | $394.172 |
| Advanced Treatment | 12 | 146.776 | 127.352 |
| Sewerage (Including I/I and CSO) | 55 | 353.940 | 310.817 |
| Stormwater | 11 | 95.135 | 78.852 |
| Hydromodification | 4 | 13.229 | 10.315 |
| Landfills | 0 | 0.000 | 0.000 |
| Other | 5 | 191.379 | 188.856 |
| ***Subtotal*** | ***90*** | ***$1,210.273*** | ***$1,110.365*** |
| **Drinking Water** | | | |
| Source Water Development | 5 | $5.531 | $3.641 |
| Water Treatment Plant | 1 | 0.056 | 0.056 |
| Transmission/Distribution Mains | 18 | 27.106 | 24.817 |
| Water Storage | 7 | 335.048 | 308.612 |
| Other | 0 | 0.000 | 0.000 |
| ***Subtotal*** | ***31*** | ***$367.741*** | ***$337.126*** |
| **Total** | **121** | **$1,578.015** | **$1,447.490** |

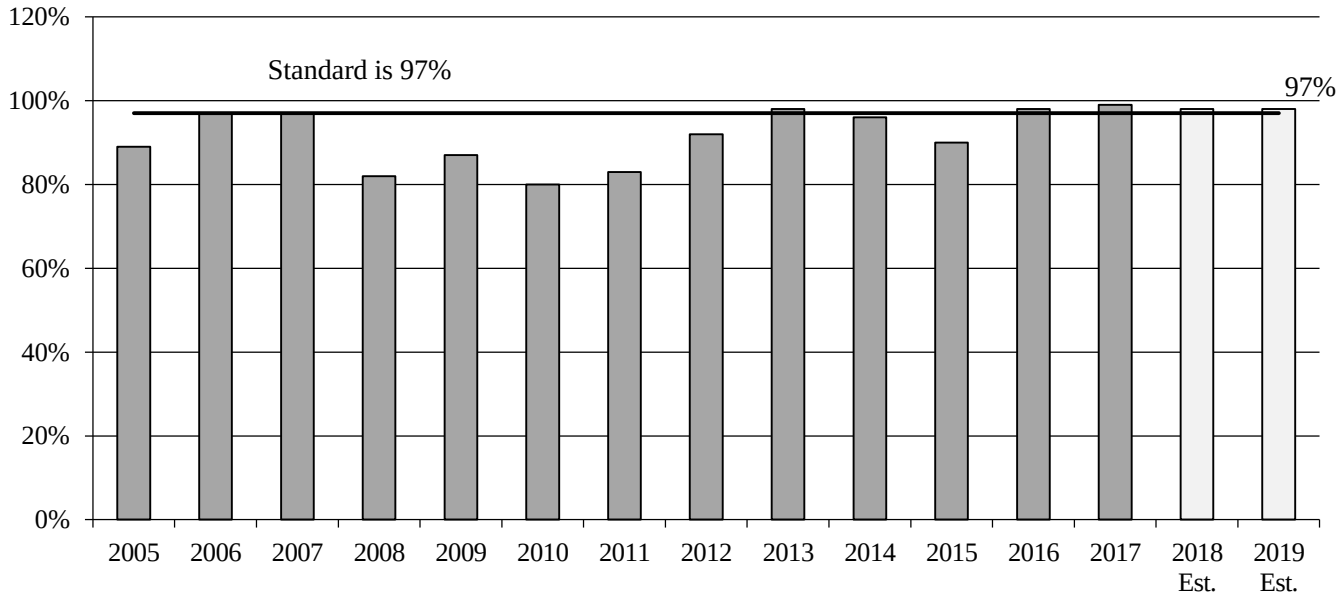
CSO: combined sewer overflow
I/I: infiltration or inflow
MDE: Maryland Department of the Environment

Source: Maryland Department of the Environment

## DWRLF

**Exhibit 2** shows an overall trend toward a cleaner public water system in Maryland. Between fiscal 2016 and 2017, there was increased compliance for public water systems as a result of water system treatment and distribution system modifications. In recent years, there has been a trend toward increasing compliance with a standard for a couple of years after the standard is created until a new standard is developed and the process starts over, which has challenged progress toward meeting MDE's 97% significant compliance goal. In addition, there has been some question in recent years about whether the data reflected compliance with all rules or only with rules for which MDE had delegated primary enforcement responsibility, or primacy. For instance, due to a legal disagreement between EPA and the Maryland Office of the Attorney General about whether to use "quarterly" or "every 90 days" for the definition of the required frequency for monitoring in Maryland's adopted regulations, MDE did not have primacy for the Stage 2 Disinfections By-Products Rule (total trihalomethanes or haloacetic acids) in fiscal 2016. As a result, MDE's measure did not include this rule in fiscal 2016.

**Exhibit 2**
**Marylanders Served by Public Water Systems in Significant Compliance**
**Fiscal 2005-2019 Est.**




Note: Up to fiscal 2008, the basis for significant compliance with public water systems rules was 97% of the rules adopted in 2002. For fiscal 2008, the basis for significant compliance is 97% of the rules adopted since fiscal 2002. For fiscal 2009 and onward, significant compliance is measured as 97% of the rules adopted as of fiscal 2009. In fiscal 2010, State regulations were adopted to reflect five new federal regulations: arsenic, radionuclide, Stage 2 Disinfection By-Product, Long Term Enhanced Surface Water Treatment, and revised lead and copper.

Source: Governor's Budget Books, Fiscal 2008-2016; Department of Budget and Management, Fiscal 2015-2019

MDE notes that in December 2017, EPA Region III approved Maryland's drinking water regulations for the Stage 2 Disinfection By-Product Rule, and primary enforcement responsibility was granted to MDE. As a result, MDE's fiscal 2017 measure for Marylanders served by public water systems in significant compliance with drinking water standards includes the rule. The population impacted by this regulation in fiscal 2017 is as follows (total population is 59,728): Springfield Hospital Distribution (Carroll County) – 1,500; Town of Perryville (Cecil County) – 3,672; Perry Point Veterans Affairs Medical Center (Cecil County) – 2,000; City of Havre de Grace (Harford County) – 14,000; City of Westminster (Carroll County) – 35,256; and Town of Princess Anne (Somerset County) – 3,300.

## BRF – Wastewater Projects

**Exhibit 3** shows the status of efforts to install BNR and ENR technology at the 67 major WWTPs. BNR technology allows WWTPs to achieve wastewater effluent quality of 8 mg/L total nitrogen and 3 mg/L total phosphorus. As of January 2018, of the 67 major WWTPs, 94% are operating at the BNR level (up from 93% as of January 2017), and 84% are operating at the ENR level (up from 75% as of January 2017).

**Exhibit 3**
**Status of BNR and ENR Construction**
**Through January 2018**

| | BNR | ENR |
|---|---|---|
| Pre-planning | 0 | 0 |
| Planning | 0 | 1 |
| Design | 1 | 2 |
| Construction | 3 | 8 |
| Under Operation | 63 | 56 |
| **Total** | **67** | **67** |

BNR: biological nutrient removal
ENR: enhanced nutrient removal

Note: The Bay Restoration Fund Advisory Committee added the Hampstead wastewater treatment plant, increasing the major plants to 67.

Source: Maryland Department of the Environment

EPA issued its *Interim Evaluation of Maryland's 2016-2017 Milestones* on June 30, 2017, which reflects the progress on best management practices implementation. The modeled results from

data provided by Maryland indicate that the State is on track to achieve its statewide 2017 targets for phosphorus and sediment but is not achieving its statewide 2017 target for nitrogen. In terms of sectors, Maryland is not meeting its 2017 nitrogen targets for the agriculture, urban/suburban stormwater, and septic sectors. Matters improve for 2017 phosphorus and sediment targets; Maryland is in compliance for all sectors except for urban/suburban stormwater. EPA's analysis includes the caveat that data being gathered for the 2017 midpoint assessment could show additional effort is needed for all three pollutants to achieve the 2025 targets. In addition, EPA notes that it has downgraded Maryland's urban/suburban stormwater sector to enhanced oversight status due to the lack of progress on the following: tentative determinations for Phase II stormwater permits, approval of any Phase I stormwater restoration plans, and nutrient and sediment reductions.

MDE indicates that there were 15 WWTPs that did not meet the deadline to fully complete the upgrade of the 67 major WWTPs to ENR technology by June 30, 2017. **Exhibit 4** shows the status of the 15 WWTPs. Of these 15 WWTPs, the Back River and Patapsco plants are the most important for reaching Chesapeake Bay restoration goals. The Back River plant is now in operation and was meeting the ENR level of treatment on September 1, 2017. The Patapsco plant is in construction and may be completed by mid-calendar 2018 and be in ENR operation by the end of calendar 2018.

**Exhibit 4**
**Status of Major WWTPs Not Upgraded to ENR by June 30, 2017**
**February 2018**

| Project | Status | Reason for Delay |
|---|---|---|
| Patapsco | Construction | The construction is approximately 93% completed. The city and the contractor (Frucon) are in dispute over some items, mainly related to the welding quality of some pipes and tanks. This has held up the project for approximately three years. After several failed attempts to resolve the issue with the contractor, in August 2017, the city issued an emergency contract for approximately $8 million to allow another contractor (Whiting Turner) to correct the items in question. Concurrently and independently, the city will continue its dispute and litigation with the original contractor. This may allow the city to complete the project by mid-2018 and be in ENR operation by the end of 2018. |
| Northeast River | Operation | The plant has been meeting ENR level of treatment since October 1, 2016. However, the final acceptance and the release of the contractor were on hold until minor punch list items were satisfactorily completed. |
| Cox Creek | Construction | Site constraints slowed down the progress of construction. Some unit processes had to be demolished to make room for new units and had to be done in a careful sequence in order to maintain the plant's operation and compliance. |

| Project | Status | Reason for Delay |
|---|---|---|
| Winebrenner | Operation | The plant has been meeting ENR level of treatment since February 17, 2017. However, the final acceptance and the release of the contractor were on hold until minor punch list items were satisfactorily completed. |
| Back River | Operation | The plant started meeting ENR level of treatment on September 1, 2017, in accordance with the compliance schedule in the consent order. |
| Freedom District | Construction | Contractor delays. Liquidated damages may be assessed. |
| Salisbury | Construction | Contractor delays. Liquidated damages may be assessed. |
| Mayo | Operation | The project consists of nine contracts that had to be scheduled carefully, and a delay in one contract can impact all the others. Project was completed on October 16, 2017. |
| Leonardtown | Construction | The town was late in completing the design and starting the construction. The town is under consent order by MDE. Project is expected to be completed this year. |
| MCI | Construction | Maryland Environmental Service was late in completing the design and starting the construction. Currently, their discharge permit is being renewed with ENR limits. |
| Frederick | Construction | The overall project construction is 88% complete. The project is approximately one year behind schedule, and the completion date was changed from August 2017 to July 2018. Project delays are due to the following: unexpected subsurface conditions were encountered that required more subsurface stabilization to support the new structure; and when the buried carbon steel air low-pressure piping, which supplies air to the reactor, was uncovered during construction, unexpected deterioration was observed. Replacement of this piping has to be carefully sequenced to maintain process air supply to the bioreactor. |
| Conococheague | Construction | The county was late in completing the design and starting the construction. The county is under a consent order by MDE. Project is expected to be completed this year. |
| Westminster | Design | Currently, the project is being bid and construction is expected to start in spring 2018. Delays were due to the following: the city needed more time for the selection of the ENR alternative; the city added a biosolids facility, a geothermal system, and a septage receiving facility to the design after the original design was completed, delaying the project approximately one additional year; and just before the city was ready to bid the project last year, a lawsuit was filed against the city by a nearby property owner delaying the bidding for a whole year. |
| Hampstead | Design | The project could not be initiated until some discharge permit concerns were resolved. The permit was contested by environmental groups and was finally processed last year. Construction is expected to start this year. |

| Project | Status | Reason for Delay |
|---|---|---|
| Princess Anne | Planning | The county currently is upgrading the plant's blower system and adding more process control equipment. The upgrade is mainly intended to provide energy savings and is being done using Energy-Water Infrastructure Program grants. However, these upgrades may also allow the plant to achieve ENR without any additional improvements. The energy project is expected to be completed by the end of 2018. After which, the plant performance will be evaluated to determine whether or not any additional ENR upgrade will be needed. |

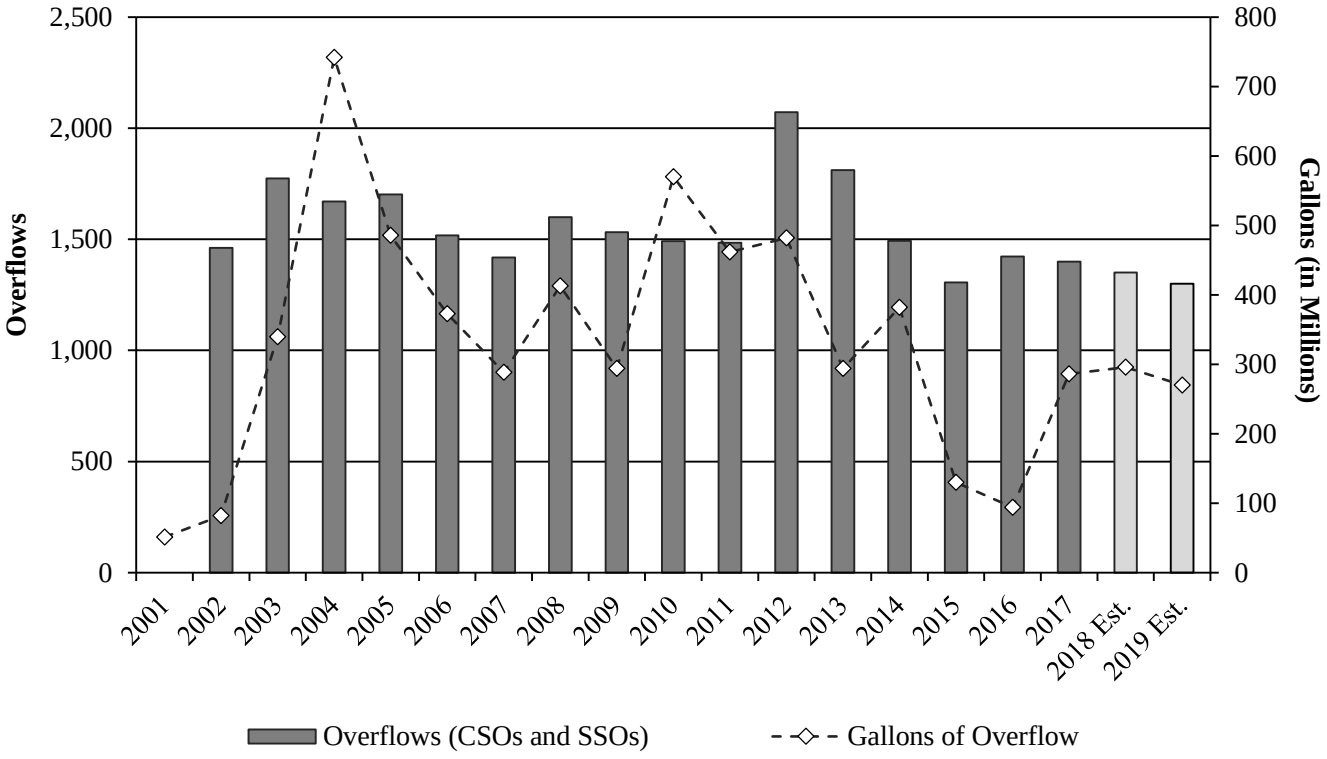
ENR: enhanced nutrient removal
MCI: Maryland Correctional Institution
MDE: Maryland Department of the Environment
WWTP: wastewater treatment plant

Source: Maryland Department of the Environment

A number of Maryland's jurisdictions have signed consent decrees requiring the upgrade of their sewer systems due to the release of untreated sewage from facilities with National Pollutant Discharge Elimination System permits. These releases are called CSOs if a jurisdiction has a single system carrying both storm and sanitary sewer water, and it is called a sanitary sewer overflow (SSO) if the two systems are separated.

As illustrated in **Exhibit 5,** the number of gallons of overflow has shown a decreasing trend between fiscal 2010 and 2017. However, over the fiscal 2001 through 2017 period, it appears very little progress has been made to reduce the number of overflows. Large overflows in a particular year may be attributable to a few extreme events, such as in Cumberland and La Vale in Allegany County in recent years. MDE has noted that funding for sewer rehabilitation, progress on improvements and repairs to collection systems, and the amount of rainfall will determine future sewer overflow reductions and that it has very little control over either the number of overflows or the associated gallons. For instance, while not necessarily reflected in Exhibit 5, MDE has noted in the past that predictions about more substantial storms due to global warming have led to higher overflow estimates for future years. MDE also has noted that it can ensure that the systems have long-term control plans and/or consent decrees or other enforcement actions to control overflows, but that remedying these shortcomings can be expensive, long-term projects; therefore, only slow progress toward the objective of a 50% reduction from the baseline amount of overflow gallons can be made.

**Exhibit 5**
**CSO and SSO Overflows**
**Fiscal 2001-2019 Est.**




CSO: combined sewer overflow
SSO: sanitary sewer overflow

Note: The number of gallons of overflow is calculated by the annual net change in number of gallons of overflows from the 2003 to 2005 average.

Source: Governor's Budget Books, Fiscal 2008-2016; Department of Budget and Management, Fiscal 2015-2019

## BRF – Septic System Projects

The septic system data provided in **Exhibit 6** reflects the large numbers of septic systems to be upgraded by the program. The greatest number of both the State's septic systems in the Critical Area and upgrades funded by the BRF are in Anne Arundel County. Since the program's inception, a total of 3,519 systems have been upgraded using non-BRF funding with the greatest number of upgrades in Anne Arundel County.

## Exhibit 6
## Septic System Data
### December 31, 2017

| County | Systems | Systems in Critical Area | Systems Not in Critical Area | BRF Upgraded Septic Systems | Critical Area BRF Upgraded Septic Systems | Septic Systems Upgraded without BRF Funding | Total BAT Systems |
|---|---|---|---|---|---|---|---|
| Allegany | 4,583 | 0 | 4,583 | 16 | n/a | 33 | 49 |
| Anne Arundel | 39,845 | 12,606 | 27,239 | 1,644 | 1,644 | 659 | 2,303 |
| Baltimore City | 0 | 0 | 0 | 0 | n/a | 0 | 0 |
| Baltimore County | 32,774 | 1,327 | 31,447 | 302 | 62 | 248 | 550 |
| Calvert | 26,960 | 5,377 | 21,583 | 787 | 702 | 329 | 1,116 |
| Caroline | 8,334 | 1,212 | 7,122 | 286 | 152 | 22 | 308 |
| Carroll | 32,935 | 0 | 32,935 | 187 | n/a | 315 | 502 |
| Cecil | 20,741 | 3,209 | 17,532 | 525 | 328 | 94 | 619 |
| Charles | 17,194 | 1,047 | 16,147 | 276 | 131 | 51 | 327 |
| Dorchester | 7,534 | 3,143 | 4,391 | 535 | 504 | 23 | 558 |
| Frederick | 27,632 | 0 | 27,632 | 234 | n/a | 338 | 572 |
| Garrett | 10,519 | 0 | 10,519 | 74 | n/a | 29 | 103 |
| Harford | 26,538 | 168 | 26,370 | 289 | 52 | 243 | 532 |
| Howard | 15,446 | 0 | 15,446 | 109 | n/a | 378 | 487 |
| Kent | 4,232 | 1,596 | 2,636 | 372 | 296 | 43 | 415 |
| Montgomery | 18,316 | 0 | 18,316 | 202 | n/a | 153 | 355 |
| Prince George's | 8,859 | 220 | 8,639 | 29 | 3 | 71 | 100 |
| Queen Anne's | 10,539 | 4,646 | 5,893 | 751 | 574 | 21 | 772 |
| Somerset | 4,792 | 1,890 | 2,902 | 760 | 535 | 46 | 806 |
| St. Mary's | 23,839 | 5,919 | 17,920 | 822 | 689 | 102 | 924 |
| Talbot | 7,456 | 3,862 | 3,594 | 493 | 511 | 88 | 581 |
| Washington | 18,955 | 0 | 18,955 | 212 | n/a | 140 | 352 |
| Wicomico | 19,160 | 1,589 | 17,571 | 536 | 237 | 38 | 574 |
| Worcester | 6,721 | 1,427 | 5,294 | 260 | 226 | 55 | 315 |
| **Total** | **393,904** | **49,238** | **344,666** | **9,701** | **6,646** | **3,519** | **13,220** |

BAT: best available technology
BRF: Bay Restoration Fund

Note: The information on the total number of septic systems is based on 2016 Maryland Department of Planning (MDP) data, while the number of systems in the Critical Area is based on 2013 MDP data. Certain counties have no septic systems in the Critical Area. In the column Critical Area BRF Upgraded Septic Systems, the information for these counties is designated as not applicable, or n/a. The Critical Area BRF Upgraded Septic Systems figures are a subset of the BRF upgrade system figures. This information does not include conventional septic systems connected to public sewer through the usage of the BRF grant.

Source: Maryland Department of the Environment

**Exhibit 7** shows the number of septic system BAT installations between fiscal 2008 and 2017. Over the time period shown, there generally has been an increase in the number of installations each year. However, between fiscal 2016 and 2017, there was a reduction from 2,258 systems to 1,620 systems, or 638 systems. The primary reason for this decrease is a reduction in the number of non-Critical Area BAT upgrades, which is most likely associated with the change in septic system regulations that became effective on November 24, 2016. The purpose of the regulation was to remove the universal requirement that BAT systems be installed outside the Critical Area for all new construction or replacement septic systems.

**Exhibit 7**
## Septic System Best Available Technology Installations
**Fiscal 2008-2017**

| Jurisdiction | Average 2008-2015 | 2016 | 2017 | Difference 2016-2017 | Total |
|---|---|---|---|---|---|
| Allegany | 4 | 9 | 7 | -2 | 47 |
| Anne Arundel | 191 | 350 | 322 | -28 | 2,201 |
| Baltimore | 38 | 131 | 86 | -45 | 519 |
| Calvert | 92 | 211 | 158 | -53 | 1,104 |
| Caroline | 26 | 54 | 29 | -25 | 289 |
| Carroll | 27 | 168 | 84 | -84 | 469 |
| Cecil | 51 | 100 | 94 | -6 | 602 |
| Charles | 21 | 59 | 49 | -10 | 278 |
| Dorchester | 49 | 62 | 67 | 5 | 524 |
| Frederick | 40 | 144 | 100 | -44 | 562 |
| Garrett | 7 | 25 | 16 | -9 | 100 |
| Harford | 38 | 121 | 57 | -64 | 485 |
| Howard | 33 | 129 | 69 | -60 | 465 |
| Kent | 47 | 39 | 32 | -7 | 446 |
| Montgomery | 27 | 82 | 45 | -37 | 345 |
| Prince George's | 6 | 35 | 15 | -20 | 98 |
| Queen Anne's | 73 | 105 | 72 | -33 | 762 |
| St. Mary's | 73 | 144 | 97 | -47 | 825 |
| Somerset | 91 | 32 | 35 | 3 | 795 |
| Talbot | 44 | 78 | 82 | 4 | 514 |
| Washington | 31 | 69 | 30 | -39 | 346 |
| Wicomico | 52 | 80 | 57 | -23 | 554 |
| Worcester | 28 | 31 | 17 | -14 | 269 |
| **Total Upgrades** | **1,090** | **2,258** | **1,620** | **-638** | **12,599** |

| Jurisdiction | Average 2008-2015 | 2016 | 2017 | Difference 2016-2017 | Total |
|---|---|---|---|---|---|
| Subset of Total Upgrades: Critical Area BAT Upgrades | 539 | 639 | 707 | 68 | 5,656 |
| Subset of Total Upgrades: Non-critical Area BAT Upgrades | 551 | 1,619 | 913 | -706 | 6,943 |

BAT: best available technology

Source: Maryland Department of the Environment

## Hazardous Substance Clean-Up Program

The previous performance measure for the Hazardous Substance Clean-Up Program was the number of properties on the State Master and Non-Master Lists that are given a "No Further Action" determination and moved to the formerly investigated sites category or archived. The State Master List identified potential hazardous waste sites in Maryland and included sites identified under the EPA's Superfund Program. The Non-Master List was comprised of sites under investigation or that had previously been investigated but were not on the State Master List. However, beginning in 2014, MDE noted that it combined all the sites into a single list called the Brownfield Master Inventory (BMI), which was an amalgamation of the State Master List, the Non-Master List, a Federal Facilities list, a Voluntary Cleanup Program list, a Formerly Used Defense Site list, and a Brownfield list.

As shown in **Exhibit 8**, the number of active and archived BMI sites increased between fiscal 2016 and 2017 and again between fiscal 2017 and 2018, based on data as of January 29, 2018. However, MDE has noted that sites can move between the active and archived list based on whether a prospective property purchaser enrolls the property in the Voluntary Cleanup Program or new environmental data suggests inclusion. Furthermore, MDE has noted that the BMI overstates the need for the Hazardous Substance Clean-Up Program because Voluntary Cleanup Program and other sites for which the Hazardous Substance Clean-Up Program are not eligible are constantly being added to the BMI. MDE has noted that it only uses State funds to conduct site assessment or remediation activities in situations where there is no financially viable responsible party. Therefore, a more accurate measure for the program would be a measure of orphan sites – sites that do not have a financially responsible party – and thus are eligible for the Hazardous Substance Clean-Up Program. In addition to time series data on how many orphan sites there are, it would be helpful to know the value of the land improvements generated by the Hazardous Substance Clean-Up Program in terms of increased taxes, new

development, jobs, and the saving of valuable undeveloped land, but this information is not currently collected.

**Exhibit 8**
**Brownfield Master Inventory Sites**
**Fiscal 2014-2018 Est.**

| | 2014 | 2015 | 2016 | 2017 | 2018 Est. |
|---|---|---|---|---|---|
| Active BMI | 748 | 727 | 1,033 | 1,130 | 1,166 |
| Archived BMI | 687 | 734 | 986 | 1,058 | 1,087 |
| **Total Sites** | **1,435** | **1,461** | **2,019** | **2,188** | **2,253** |

BMI: Brownfield Master Inventory

Note: The fiscal 2018 data is as of January 29, 2018.

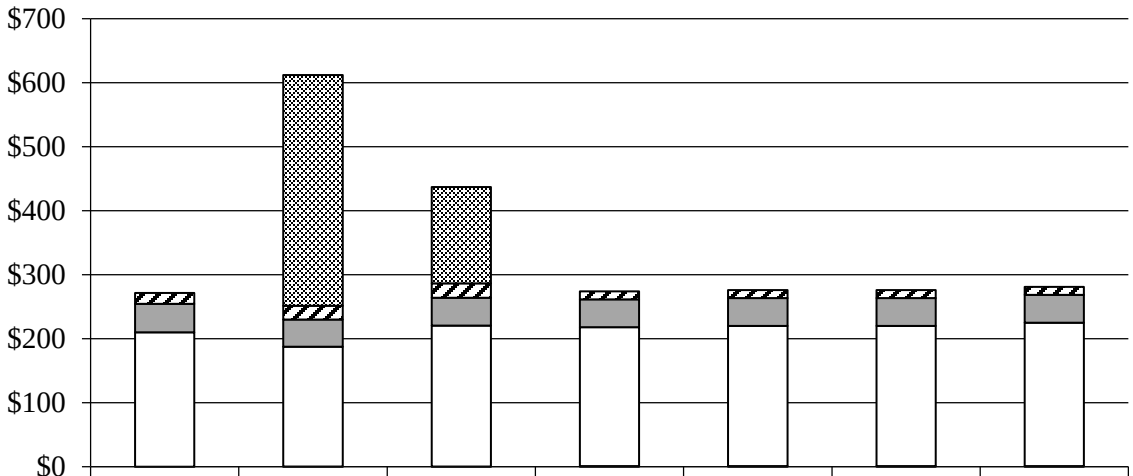
Source: Maryland Department of the Environment

# *Budget Overview*

## Fiscal 2019 Budget

MDE's fiscal 2019 capital program includes $0.5 million in general funds, $220.3 million in special funds, $43.3 million in federal funds, $22.7 million in general obligation (GO) bonds, and $150.0 million in revenue bonds for a total of $436.8 million. The overall change between fiscal 2018 and 2019 is a $175.0 million decrease, as shown in **Exhibit 9**. The decrease in funding between fiscal 2018 and 2019 is attributable to the $100.0 million reduction in revenue bond authorization for the DWRLF, $60.0 million revenue bond authorization for the BRF – Wastewater Projects, and $50.0 million revenue bond authorization for the WQRLF, which are offset partially by an increase of $19.2 million in special funds for the WQRLF, $10.0 million in special funds for the BRF – Wastewater Projects, and $4.0 million in special funds for the DWRLF.

**Exhibit 9**
**MDE Capital Programs Funding**
**Fiscal 2017 Appropriation-2023 Est.**
**($ in Millions)**




| | 2017 Approp. | 2018 Approp. | 2019 Request | 2020 Est. | 2021 Est. | 2022 Est. | 2023 Est. |
|---|---|---|---|---|---|---|---|
| Total | $271.6 | $611.7 | $436.7 | $274.0 | $276.0 | $276.0 | $281.0 |
| Revenue Bonds | 0.000 | 360.000 | 150.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| GO Bonds | 16.980 | 21.524 | 22.653 | 12.430 | 12.430 | 12.430 | 12.430 |
| PAYGO FF | 44.319 | 42.614 | 43.300 | 43.300 | 43.300 | 43.300 | 43.300 |
| PAYGO SF | 210.086 | 187.101 | 220.280 | 217.270 | 219.270 | 219.270 | 224.270 |
| PAYGO GF | 0.200 | 0.500 | 0.500 | 1.000 | 1.000 | 1.000 | 1.000 |

FF: federal funds
GF: general funds
GO: general obligation
MDE: Maryland Department of the Environment
PAYGO: pay-as-you-go
SF: special funds

Source: Governor's Capital Budget, Fiscal 2019; Department of Budget and Management, Capital Budget Worksheets

For the out-years, once the $100.0 million WQRLF revenue bond issuance in fiscal 2019 is accounted for, there is anticipated to be slightly lower funding available due to the end of revenue bond authorizations for the WQRLF, the DWRLF, and the BRF – Wastewater Projects; and a lower GO bond match funding amount for the WQRLF and the DWRLF, which are artificially high in fiscal 2019. The Energy-Water Infrastructure Program receives final funding in fiscal 2019, but the loss of the associated special funds is partially offset by increases in the special funds revolving through the WQRLF and the DWRLF.

## Matching Federal Funding

The fiscal 2019 authorization of GO bond match funding to the federal capitalization for the WQRLF and the DWRLF is doubled. This reflects the recommendation by EPA that MDE match the federal funding as soon as it is available in order to avoid the appearance of large fund balances that are not being used and thus might be repurposed. MDE notes that the State budget and federal budget cycles are not synchronized. The federal budget cycle begins in October – three months after the State budget cycle starts in July. Currently, the match to federal funds becomes available to use nine months after MDE has been awarded the federal funds. Since the federal funds cannot be drawn before the State match is available, funding for Maryland projects lags behind one year. At the recommendation of EPA, MDE is requesting that the State match become available at the beginning of the federal budget cycle rather than at the end of the federal budget cycle. MDE further notes that having the State match funds available at the beginning of the federal budget cycle used to be MDE's practice, but, because of State fiscal constraints in the past, the match was moved out by one year. Over time, the match funding has changed back and forth between general funds in times of fiscal surplus and GO bonds in times of fiscal constraint.

## Multiple Uses and Sources of Funding

Similar to previous years, a number of projects in MDE's fiscal 2019 capital budget receive multiple sources of funding and several programs have multiple uses. **Appendix 1** shows the multiple uses and sources of funding in MDE's fiscal 2019 budget.

## Highlights

The changes in funding between fiscal 2018 and 2019 are reflected in terms of the program overall difference in **Exhibit 10**.

**Exhibit 10**
## MDE Capital Funding Changes
**Fiscal 2018-2019**
**($ in Millions)**

| Program | 2018 Approp. | 2019 Request | Difference |
|---|---|---|---|
| Maryland Drinking Water Revolving Loan Fund | $129.003 | $32.830 | -$96.173 |
| Bay Restoration Fund – Wastewater Projects | 120.000 | 70.000 | -50.000 |
| Maryland Water Quality Revolving Loan Fund | 336.792 | 306.600 | -30.192 |
| Septic System Upgrade Program | 15.000 | 15.000 | 0.000 |
| Biological Nutrient Removal Program | 0.000 | 0.000 | 0.000 |
| Hazardous Substance Clean-Up Program | 0.500 | 0.500 | 0.000 |
| Mining Remediation Program | 0.500 | 0.500 | 0.000 |
| Energy-Water Infrastructure Program | 8.000 | 8.000 | 0.000 |
| Water Supply Financial Assistance Program | 1.944 | 3.303 | 1.359 |
| **Total** | **$611.739** | **$436.733** | **-$175.006** |

MDE: Maryland Department of the Environment

Source: Department of Budget and Management; Department of Legislative Services

The highlighted changes in funding for fiscal 2019 are as follows.

- ***Maryland DWRLF:*** The DWRLF allowance for fiscal 2019 is $32.8 million, which is $96.2 million less than the fiscal 2018 working appropriation and $2.8 million more than the amount programmed in the 2017 *Capital Improvement Program* (CIP) for fiscal 2019. The funding decrease relative to the fiscal 2018 working appropriation is due to a reduction of $100.0 million in revenue bonds, which is offset partially by an increase of $4.0 million in special funds. The reduction would have been greater, but in fiscal 2019, there is double the amount of GO bond funding authorized to match the federal capitalization as a result of EPA encouraging Maryland to get on a cycle of matching the federal funding as soon as it is available. This essentially level funds the GO bond authorization because in fiscal 2018 there was $5.8 million in GO bond authorization to provide for both the fiscal 2017 and 2018 capitalization amounts, since the matching funds provided in fiscal 2017 were general funds that were reverted as part of cost containment. The fiscal 2019 allowance includes $16.9 million in special funds, $10.3 million in federal funds, and $5.7 million in GO bond authorization used as matching funding. The funding provides for 14 projects serving 878,449 homes in eight subdivisions throughout the State. The largest projects in the fiscal 2019 allowance are as follows: the Druid Lake Tanks project is budgeted $10.8 million and would replace an existing

open surface finished water reservoir at the Druid Lake Reservoir as part of the administrative order to comply with the Long Term 2 Enhanced Surface Water Treatment Rule; the Ashburton Reservoir Improvements Project is budgeted $6.7 million and would replace the existing open surface finished water reservoir at the Ashburton Reservoir as part of the same administrative order; and the Edgewater Beach Petition project is budgeted $3.8 million and would connect approximately 157 existing and future homes to the Broad Creek water system as a result of elevated nitrate levels. MDE notes that the National Drinking Water Needs Survey – which is expected to be updated – has not been released and an anticipated release date has not been made public.

- ***BRF – Wastewater Projects:*** Funding for the BRF – Wastewater Projects is $70.0 million in special funds, which is $50.0 million less than was budgeted in fiscal 2018 but $5.0 million more than was programmed in the 2017 CIP for fiscal 2018. The funding provides for 17 projects in eight jurisdictions and will reduce approximately 99,572 pounds of nitrogen per year from flowing to the Chesapeake Bay and sewer rehabilitation projects that serve 921,486 homes throughout Maryland. For fiscal 2019, there are a number of sewer projects and one large major-minor WWTP upgrade to ENR: Deep Creek Lake. While the Deep Creek Lake WWTP does not discharge into the Chesapeake Bay, and thus would not seemingly be a priority for the BRF, MDE notes the project received the highest number of possible nitrogen removal cost-efficiency points. The overall revenue bond authorization has increased to $590.0 million as a result of an additional $60.0 million revenue bond authorization for the BNR projects that were incorporated into the BRF – Wastewater Projects as authorized by Chapters 368 and 369 of 2017 (BRF – Eligible Costs – Expansion). The additional revenue bond authorization was used to cover the upgrade of the Back River WWTP to BNR. MDE notes that there is no impact on debt service at this point as MDE plans to evaluate the need to issue additional BRF bonds in fiscal 2020.

- ***Maryland WQRLF:*** The WQRLF allowance for fiscal 2019 is $306.6 million, which is $30.2 million less than the fiscal 2018 working appropriation and $56.6 million more than the amount programmed in the 2017 CIP for fiscal 2019. The funding decrease relative to the fiscal 2018 working appropriation is due to a reduction of $50.0 million in revenue bonds, which is offset partially by an increase of $19.2 million in special funds and $685,000 in federal funds. The reduction would have been greater, but in fiscal 2019, there is double the amount of GO bond funding authorized in order to match the federal capitalization as a result of EPA encouraging Maryland to get on a cycle of matching the federal funding as soon as it is available. This essentially level funds the GO bond authorization because in fiscal 2018 there was $13.3 million in GO bond authorizations to provide for both the fiscal 2017 and 2018 capitalization amounts, since the matching funds provided in fiscal 2017 were general funds that were reverted as part of cost containment. The fiscal 2019 allowance includes $110.4 million in special funds, $33.0 million in federal funds, $13.2 million in GO bond authorizations used as matching funding, and $150.0 million in revenue bond authorizations in case MDE needs to cover cash flow. The largest projects in the fiscal 2019 allowance are as follows: the Back River Headworks Improvement project is budgeted $95.3 million for complying with the Wet Weather Consent Decree by constructing improvements that are estimated to eliminate 82% of Baltimore City's SSOs by volume and allow Baltimore City to

manage all the wet weather flows at the Back River WWTP; Piscataway WWTP Bio Energy Project is budgeted $86.6 million for a regional biosolids handling and treatment facility that will produce Class-A biosolids and recover energy from the methane gas produced from anaerobic sludge digestion for a 17.4 year payback period; and Baltimore City Municipal Separate Storm Sewer System (MS4) Upgrades for construction of stormwater management facilities throughout Baltimore City, including bioretention, raingardens, and stream stabilization.

- ***Septic System Upgrade Program:*** The fiscal 2019 appropriation of $15.0 million in special funds for the Septic System Upgrade Program is equal to both the fiscal 2018 appropriation and the fiscal 2019 amount programmed in the 2017 CIP. There is also $1.5 million in MDE's operating budget that is programmed by Chapter 379 of 2014 (BRF – Authorized Uses – Local Entities), which requires that up to 10% of the funds in the septic account of the BRF be distributed to a local public entity delegated by MDE – local health departments – to cover reasonable costs associated with implementation of MDE regulations pertaining to septic systems that use the BAT for nitrogen removal. The program anticipates upgrading 1,100 systems in fiscal 2019. The program is discussed further in an issue in this analysis.

- ***Hazardous Substance Clean-Up Program:*** The fiscal 2019 allowance includes $0.5 million in general funds for the Hazardous Substance Clean-Up Program, which is equal to the fiscal 2018 working appropriation but is $0.5 million less than the amount programmed in the 2017 CIP for fiscal 2019. The $0.5 million in fiscal 2019 will allow for the planning of the 1600 Harford Avenue (former Stop, Shop and Save) project in Baltimore City, planning of the former Ames Shopping Plaza project in Harford County, the construction of the Chemical Metals, Site No. 1 project in Baltimore City, and construction of the Mister G's Cleaners project in Prince George's County. In addition, the funding would provide for site assessments across the State.

- ***Mining Remediation Program:*** The Mining Remediation Program receives its fifth year of funding in fiscal 2019 – $500,000 in GO bonds – which is equal to both the fiscal 2018 authorization and the 2017 CIP amount programmed for fiscal 2019. The money provides for funding of the Upper Georges Creek: Borden Shaft Restoration Project, referred to by Allegany County as the Upper Georges Creek: Shaft Stream Restoration Project. The project involves restoring 3,500 linear feet of Georges Creek channel and thus reducing the formation of acid mine drainage and improving water quality. A $786,422 matching grant is provided to the project from the Chesapeake and Atlantic Coastal Bays 2010 Trust Fund – overseen by the Department of Natural Resources. The project will use the Mining Remediation Program funding for draining the existing pond, restoring the integrity of the stream, eliminating the current loss-zone, and preparing the site for restoration of the riparian zone. The Chesapeake and Atlantic Coastal Bays 2010 Trust Fund grant will be used to revegetate the riparian zone and thus provide reductions in nitrogen, phosphorus, and sediment. In terms of future projects, MDE notes that stream sealing projects in other loss-zone sections of the Georges Creek watershed will be completed as funding becomes available. Overall, MDE has estimated a total Mining

Remediation Program need of approximately $60 million – split evenly between the federal government and the State. However, MDE notes that the federal funding is scheduled to end in fiscal 2022.

- ***Energy-Water Infrastructure Program:*** The fiscal 2019 allowance includes $8.0 million for the third year of funding for the Energy-Water Infrastructure Program. This funding is even with the amount provided in fiscal 2018 and the amount programmed for fiscal 2019 in the 2017 CIP. The program is funded from the agreement by which, under PSC Order 86372, Dominion Cove Point is allowed to construct a 130-megawatt nameplate capacity electric generating station at the existing liquefied natural gas terminal site in Calvert County near Cove Point. The Energy-Water Infrastructure Program is discussed in an update in this analysis.

- ***Water Supply Financial Assistance Program:*** The Water Supply Financial Assistance Program funding of $3,303,000 in GO bonds reflects a $1,359,000 increase relative to the amount budgeted in fiscal 2018 and is $803,000 more than the amount programmed in the 2017 CIP for fiscal 2019. The increased funding is provided to fully fund eligible projects. The Wicomico Regional Airport Water Extension project in Wicomico County is the largest project in the fiscal 2019 allowance and receives $1,500,000. The project involves connecting the Wicomico Regional Airport's water system to the City of Salisbury. The project is needed because the existing airport water system has water quality problems – including high levels of lead, copper, and iron – and cannot provide a sufficient supply of water for the airport. Additional problems include vulnerability to surface runoff contamination due to unprotected wellhead areas and substandard well construction. Overall, the project will serve 26 existing and 41 future connections that will serve both the airport and local businesses. In terms of fiscal 2018 funding, MDE expects to encumber $5,181,762 – which exceeds all but the encumbrance level of fiscal 2015 in recent years – due to the expectation that projects identified for funding will proceed to construction bid and thus funds will be encumbered.

# *Issues*

## 1. Regulations and Administration Bills Reduce Septic System Upgrades

The Phase II Watershed Implementation Plan strategy for septic system upgrades is 43,181 additional septic systems not planned for connection to WWTPs. This figure is comprised of 15,141 systems in the Critical Area, 15,498 systems outside the Critical Area but within 1,000 feet of a perennial stream, and 12,542 additional systems outside the Critical Area and beyond 1,000 feet of a perennial stream. MDE has noted in the past that along with the approximately 1,200 septic systems upgraded per year with BRF funding, the regulations requiring BAT for new construction and repairs to existing homes in the Chesapeake Bay watershed, paid for by homeowners, will help convert most septic systems to BAT over the septic systems 30-year lifecycle.

However, MDE adopted a new septic system regulation that became effective on November 24, 2016. The purpose of the regulation was to remove the universal requirement that BAT

systems be installed outside the Critical Area for all new construction or replacement septic systems. Under the regulation, BAT systems are still required outside of the Critical Area if the system has a design flow of 5,000 gallons per day or greater, or if the local jurisdiction enacts code to require BAT systems outside of the Critical Area in order to protect public health or the waters of the State. MDE has estimate that approximately 703 fewer BAT systems may be installed annually in the State as a result of the regulation. In addition, the Administration has noted that there may be an increase of approximately 50,000 pounds of nitrogen over the next 10 years. MDE notes that for fiscal 2018, the percentage of total funding for the number of septic systems in non-Critical Areas has decreased from 30% to 20%.

In addition, two Administration bills – SB 314 and HB 361 (BRF – Fee Exemption, Disbursements, and Financial Assistance (Septic Stewardship Act of 2018)) – have been introduced in the 2018 legislative session. The bills would, among other actions, reduce from 60% to 50% the amount that is available for septic system upgrades from the BRF – Septic Account. MDE estimates that the bills would result in 200 less systems being funded each year assuming an average septic system cost of $13,000. **DLS recommends that MDE comment on the plan for meeting Chesapeake Bay restoration nutrient reduction goals for the septic sector, given the adoption of the regulations removing the universal requirement that BAT systems be installed outside the Critical Area and the proposed reduction of BRF – Septic Account revenue via SB 314 and HB 361.**

## 2. BRF Uses Continue to Expand

Chapter 428 of 2004 established the BRF to provide grants to owners of WWTPs to reduce nutrient pollution to the Chesapeake Bay by upgrading the systems with ENR technology. The fund is also used to support septic system upgrades and the planting of cover crops; and through fiscal 2009, was authorized to provide funding for stormwater management, which was phased out and instead provided to local jurisdictions for operations and maintenance of upgraded WWTPs that met permit limits. In recent years, legislation has expanded the use of the BRF that raises the question of whether the BRF is being stretched too thin to be effective.

For instance, in July 2015, the University of Maryland, College Park Campus (UMCP) Environmental Finance Center released a financing strategy report. The report, *Maryland's Chesapeake Bay Restoration Financing Strategy Final Report*, included estimated costs and revenues. Overall, the UMCP Environmental Finance Center estimated a $7.8 billion financing gap, primarily in the areas of onsite wastewater (septic systems) and urban stormwater. The updated report on historical and projected Chesapeake Bay restoration spending submitted in December 2016 notes a remaining funding gap between fiscal 2017 and 2025 of $5.1 billion but continues to indicate that the gap can be closed if the State temporarily loans the excess wastewater sector allocation to meet the expected shortfall in the stormwater and septic sectors, holds MS4 permit holders to their requirements, and uses the BRF and Chesapeake and Atlantic Coastal Bays 2010 Trust Fund as cost effectively as possible.

The recent legislation impacting the BRF is as follows.

- ***Chapter 150 of 2012 (Environment – BRF – Fees and Uses):*** Chapter 150 increased the BRF fee beginning July 1, 2012, in order to address a funding shortfall that would have made it very difficult to complete the upgrades to the 67 major publicly owned WWTPs by calendar 2017, as required by the WIP. Chapter 150 also established additional uses for the fund beginning in fiscal 2018 as follows, in order of priority: (1) funding an upgrade of a wastewater facility with a design capacity of 500,000 gallons or more per day to ENR technology; (2) funding for the most cost-effective ENR upgrades at wastewater facilities with a design capacity of less than 500,000 gallons per day; (3) costs associated with upgrading septic systems and sewage holding tanks; and (4) grants for local government stormwater control measures for jurisdictions that have implemented a specified system of charges under current authority.

- ***Chapter 153 of 2015 (Environment – BRF – Use of Funds):*** Beginning in fiscal 2016, Chapter 153 added to the authorized uses of the BRF by providing funding for up to 87.5% of the cost of projects relating to CSO abatement, rehabilitation of existing sewers, and upgrading conveyance systems, including pumping stations. This effectively ended the need for the Supplemental Assistance Program and, thus, reduced the need for the $5 million of GO bonds programmed each year between fiscal 2017 and 2020 in the 2015 CIP. The bill also altered the priority of BRF funding beginning in fiscal 2018 by making grants for septic system upgrades, stormwater management, and CSO and sewer abatement projects of equal priority, with funding decisions made on a project-specific basis.

- ***Chapter 23 of 2017 (Budget Reconciliation and Financing Act of 2017):*** Chapter 23 authorized the use of up to $60 million of tax-supported revenue bonds and the funds in the BRF to fund BNR projects, while Chapters 368 and 369 of 2017 (BRF – Eligible Uses – Expansion) permanently expanded the allowable uses of the BRF to include BNR projects. In general, a WWTP can be considered to have no upgrade at all; operate at BNR; or operate at the even higher level of ENR. Previously, only costs related to upgrading a facility from BNR to ENR were eligible for BRF funding; costs related to upgrading a plant to BNR were not eligible. Under Chapters 368 and 369, a WWTP is eligible for an upgrade from no upgrade all the way to ENR. The fiscal 2018 capital budget bill de-authorized $11 million of GO bonds authorized at the 2016 session for BNR projects and funded these projects and $49 million of new BNR projects from the revenue bond issuance and the funds available in the BRF.

- ***Chapter 397 of 2017 (BRF – Upgraded Wastewater Facilities – Grants to Counties and Municipalities):*** Chapter 397 authorized MDE to use funds from the BRF to award a grant to a county or municipality that upgraded a wastewater facility to ENR before July 1, 2013, if (1) the county or municipality did not receive a grant for the upgrade from the BRF and (2) the customers of the wastewater facility pay the bay restoration fee. Up to $2 million in grants may be awarded by MDE on a first-come, first-served basis. The grant program terminates September 30, 2019.

- ***Chapters 366 and 367 of 2017 (Clean Water Commerce Act of 2017):*** Chapter 366 and 367 expanded the authorized uses of the BRF's Wastewater Account to include, after funding other specified BRF priorities, the purchase of cost-effective nitrogen, phosphorus, or sediment load reductions in support of the State's efforts to restore the health of the Chesapeake Bay. The bills authorized up to $4 million in fiscal 2018, $6 million in fiscal 2019, and $10 million per year in fiscal 2020 and 2021 from the BRF for that purpose. The nitrogen, phosphorus, and sediment load reductions cannot be from the agricultural sector and must be created on or after July 1, 2017. MDE must adopt implementing regulations in consultation with the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Natural Resources, and the Secretary of Transportation, and with public- and private-sector stakeholders. The bills, which terminate June 30, 2021, also establish reporting requirements for MDE.

While it is acknowledged that the original goal of the BRF to upgrade the 67 major WWTPs to ENR technology almost has been met, the uses of the BRF have been expanded to include septic system upgrades, stormwater management, CSO and sewer abatement projects, nutrient reduction purchases, and BNR upgrades. Some of the funding changes reflect the defraying of what would be local expenses and other changes reflect the interest in defraying the need for GO bond authorizations. It is unclear whether the changes to the BRF allow for cost-effective use of the BRF to meet Chesapeake Bay restoration goals. **DLS recommends that MDE comment on the future year allocation plans for the BRF, whether it will continue to be an effective source of funding even though spread across so many diverse uses, and whether it is still considered to be sufficiently focused on Chesapeake Bay restoration in order to meet the needs of the overall Chesapeake Bay restoration funding plan.**

# *Updates*

## 1. Energy-Water Infrastructure Program Funding and Project Status

The Energy-Water Infrastructure Program received appropriations of $16.2 million in fiscal 2017, $8.0 million in fiscal 2018, and is now budgeted to receive $8.0 million in fiscal 2019. The status of funding and project for each of these years is as follows.

- ***Fiscal 2017:*** As shown in **Exhibit 11**, $8.0 million of the $16.2 million has been encumbered and $1.9 million has been expended. MDE notes that projects have been slow to move but that funds will be encumbered after construction bids open.

- ***Fiscal 2018:*** No funding has been encumbered or expended because the MOU between MEA and MDE has not been signed. Fiscal 2018 projects are reflected in **Appendix 2**.

- ***Fiscal 2019:*** MDE notes that it will solicit for fiscal 2019 projects once funding has been confirmed.

**Exhibit 11**

## Energy-Water Infrastructure Program Encumbrances and Expenditures of Fiscal 2017 Funding

**Fiscal 2017-2018**

| Applicant | Project Name | Payback (Years) | BPW Date | Encumbered | Expended |
|---|---|---|---|---|---|
| Anne Arundel County | Annapolis, Broadneck, Maryland City, and Patuxent WWTPs Belt Filter Press Upgrades | 168 | May 10, 2017 | $1,000,000 | $24,891 |
| Easton Utilities | Easton Wastewater Treatment Plant Photo-Voltaic Array | 15 | May 10, 2017 | 3,000,000 | 1,752,205 |
| Kent County | Water and Wastewater Treatment Plant Lighting Efficiency Upgrade | 17 | July 5, 2017 | 129,720 | 0 |
| City of Salisbury | Salisbury Park Water Treatment Plant High Service Pumps Replacement | 6 | August 16, 2017 | 132,000 | 0 |
| Howard County | Little Patuxent Water Reclamation Plant Influent Pump Station Replacement | 39 | August 16, 2017 | 963,900 | 0 |
| Town of Pittsville | Pittsville Systemwide Water Pressure Reduction | 29 | October 4, 2017 | 209,496 | 0 |
| Town of Sharptown | Sharptown Water Treatment Plant Solar Modification | 28 | October 4, 2017 | 379,568 | 131,697 |
| Somerset County | Princess Anne Wastewater Treatment Plant Energy Reduction | 22 | November 1, 2017 | 1,000,000 | 0 |
| Town of Delmar | Pine Street Pump Station Energy Reduction | 37 | February 7, 2018 | 149,500 | 0 |
| Pocomoke City | Clarke Avenue Pump Station Energy Saving Improvements | 180 | February 7, 2018 | 1,000,000 | 0 |
| **Total** | | | | **$7,964,184** | **$1,908,793** |

BPW: Board of Public Works
WWTP: wastewater treatment plant

Source: Maryland Department of the Environment

The fiscal 2018 projects are divided into energy-efficient equipment and alternative energy/combined heat and power. The expected payback time – dollar value of annual energy savings divided by the total capital cost – ranges from 6.4 to 39.1 years for the energy-efficient equipment projects and from 15.9 to 23.4 years for the alternative energy/combined heat and power projects, which is an improvement upon the payback period range for the fiscal 2017 projects. **Exhibit 12** shows the range of measures for the submitted project information.

**Exhibit 12**
**Energy-Water Infrastructure Program Statistics**
**Fiscal 2018**

| Measure | Energy-efficient Equipment (Energy Savings) | Alternative Energy/ Combined Heat and Power (Energy Production) |
|---|---|---|
| Total Capital Cost | $19,336 to $1,032,274 | $188,000 to $37,000,000 |
| Annual Energy Savings/Energy Production (kWh) | 5,006 to 1,612,615 | 80,500 to 21,300,000 |
| Annual Energy Savings/Production (Percent) | 12% to 95% | 4% to 80% |
| Dollar Value of Annual Energy Savings/Production | $501 to $161,262 | $8,050 to $2,130,000 |
| Expected Payback Time (Years) | 6.4 to 39.1 | 15.9 to 23.4 |
| Fiscal 2018 Grant | $19,336 to $1,000,000 | $188,000 to $3,000,000 |
| Total Fiscal 2018 Grants | $1,902,622 | $7,890,622 |

kWh: kilowatt hour

Source: Maryland Department of the Environment; Department of Legislative Services

Two of the largest fiscal 2018 projects are as follows.

- **Energy-efficient Equipment**

  - ***LED Lights for Montebello Filtration Plant ($1,000,000 Grant for $1,032,274 Total Project Cost):*** Retrofit light fixtures at Montebello with energy efficient light-emitting diodes to achieve 1,612,615 kilowatt hour (kWh) in annual energy savings worth $161,262 (81% of all savings for energy-efficient equipment projects) with an expected 6.4-year payback period.

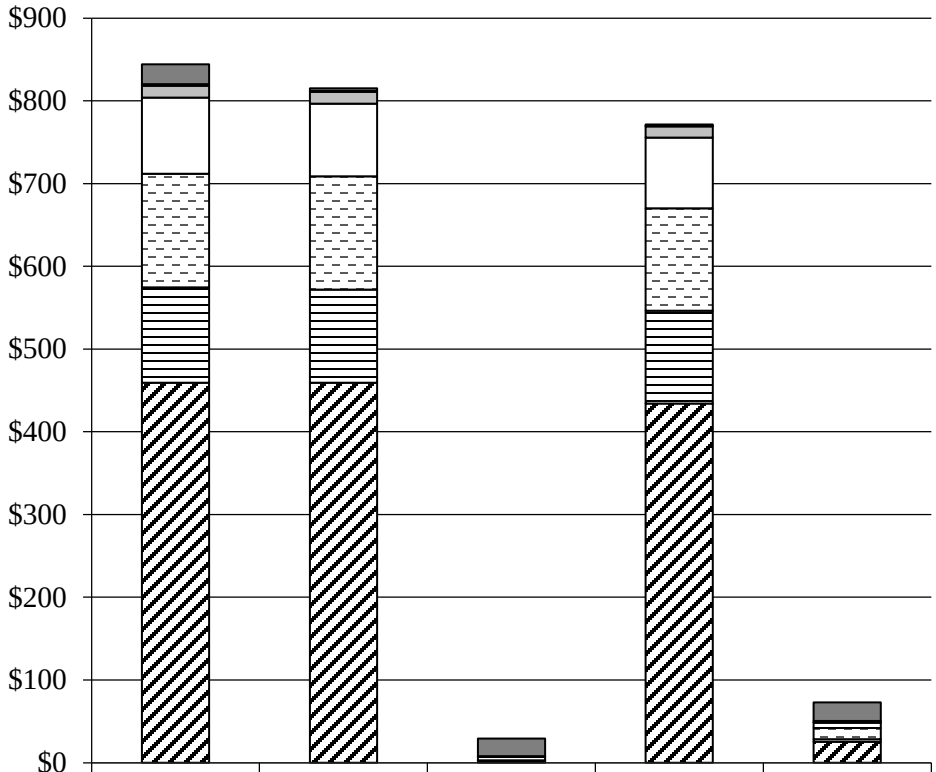
- **Alternative Energy/Combined Heat and Power**

  - ***Piscataway WWTP Bio-Energy Combined Heat and Power ($3,000,000 Grant for a $37,000,000 Total Project Cost):*** Construct a combined heat and power project at Piscataway WWTP to achieve 21,300,000 kWh in annual energy production worth $2,130,000 (92% of all production for alternative energy/combined heat and power projects) with an expected 17.4-year payback period.

## *Encumbrances and Expenditures*

**Exhibit 13** reflects the encumbrance and expenditure levels for the BNR, Supplemental Assistance, Septic System Upgrade, Water Supply Financial Assistance, Hazardous Substance Clean-Up, Mining Remediation, and Energy-Water Infrastructure programs. In general, the exhibit reflects expenditure levels being proportionate to the total authorization for the program, with the exception of the Mining Remediation and the Energy-Water Infrastructure programs, which have relatively low expenditure levels relative to the amount authorized. The largest authorization reflected is for the BNR Program, which has $459.4 million authorized. Of this amount, all of the funding has been encumbered. The $25.3 million that remains to be expended typically reflects the delays in reimbursement requests from local governments that are responsible for project procurement and implementation.

**Exhibit 13**
## Non-BRF Programs – Encumbrances and Expenditures
**Program Inception through February 2018**
**($ in Millions)**




| | Total Authorized | Encumbered | To Be Encumbered | Expended | To Be Expended |
|---|---|---|---|---|---|
| Total | $844.3 | $815.0 | $29.3 | $771.5 | $72.8 |
| Energy-Water Infrastructure Program | 24.2 | 2.8 | 21.4 | 1.8 | 22.4 |
| Mining Remediation Program | 2.0 | 1.3 | 0.7 | 0.6 | 1.4 |
| Hazardous Substance Clean-Up Program | 14.3 | 14.2 | 0.1 | 13.7 | 0.5 |
| Water Supply Financial Assistance | 91.9 | 87.9 | 4.0 | 85.3 | 6.6 |
| Septic System Upgrade | 137.3 | 137.2 | 0.2 | 124.0 | 13.4 |
| Supplemental Assistance | 115.2 | 112.2 | 2.9 | 112.0 | 3.2 |
| Biological Nutrient Removal | 459.4 | 459.4 | 0.0 | 434.1 | 25.3 |

BRF: Bay Restoration Fund

Source: Maryland Department of the Environment

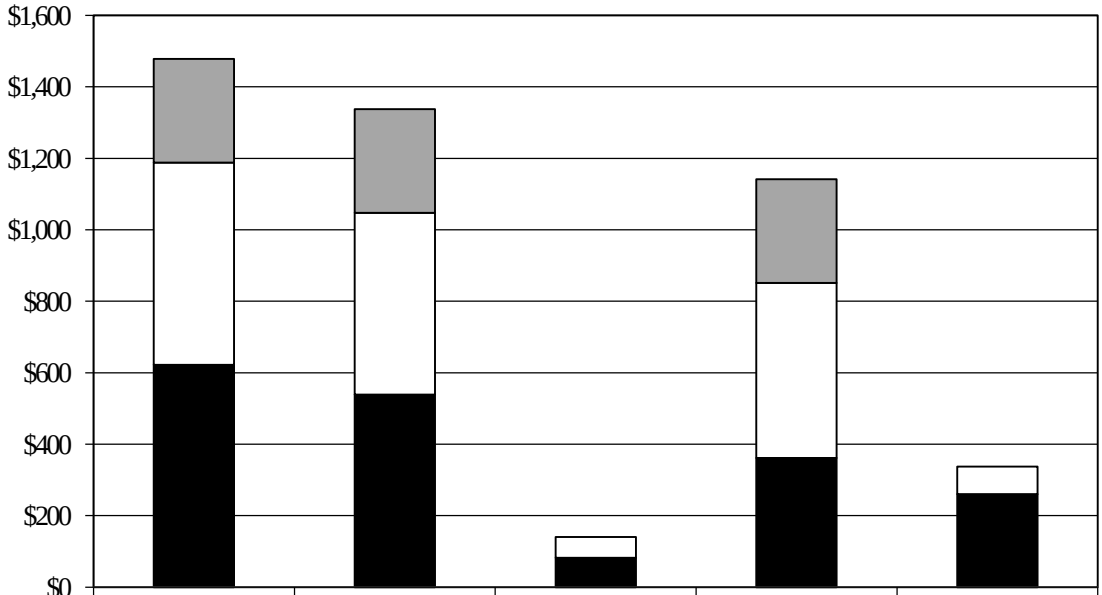
**Exhibit 14** reflects the encumbrances and expenditures for the BRF – Wastewater Projects. The overall authorization is $1.5 billion, of which $140.6 million remains to be encumbered, and $337.3 million still remains to be expended. However, the majority of the amount to be encumbered and to be expended reflects MDE's authorization of $590.0 million in revenue bonds, which includes the $60.0 million added in fiscal 2018 for BNR projects in fiscal 2017 and 2018. To date, $330.0 million in revenue bonds have been issued – $50.0 million in fiscal 2008, $100.0 million in fiscal 2014, and $180.0 million in fiscal 2016 – based on cash flow needs for project reimbursements in order to fund the approximately $1.25 billion cost of upgrading the 67 major WWTPs to ENR technology. MDE anticipates issuing revenue bonds next in fiscal 2020. Although only $330.0 million of the revenue bond authorization has been issued, MDE reflects the encumbrance or obligation of $539.2 million in authorization for projects in anticipation that the revenue bonds will be issued within the next couple of years but will most likely need to be adjusted based on the new revenue bond issuance schedule.

**Exhibit 14**

## Bay Restoration Fund – Wastewater Projects – Encumbrances and Expenditures

**Program Inception through February 2018**

**($ in Millions)**




| | Total Authorization | Encumbered | To Be Encumbered | Expended | To Be Expended |
|---|---|---|---|---|---|
| Total | $1,478.5 | $1,337.9 | $140.6 | $1,141.2 | $337.3 |
| GO Bonds | 290.0 | 290.0 | 0.0 | 290.0 | 0.0 |
| Special Funds | 566.7 | 508.7 | 58.0 | 489.4 | 77.3 |
| Revenue Bonds | 621.8 | 539.2 | 82.6 | 361.8 | 260.0 |

GO: general obligation

Source: Maryland Department of the Environment

## *Pre-authorizations and De-authorizations*

As shown in **Exhibit 15**, the Water Supply Financial Assistance Program fiscal 2011 authorization is reduced from $3,500,000 to $3,150,000 to reflect the de-authorization of $350,000 from the $1,000,000 authorized for the Charles County Water Supply System to reduce it to $650,000. MDE notes that the GO bonds were over seven years old, and the authorization was reverted at the end of fiscal 2017. **DLS recommends approval of the de-authorization of $350,000 of GO bond authorization for the Water Supply Financial Assistance Program – Charles County Water Supply System project from fiscal 2011.**

**Exhibit 15**
**De-authorizations**

| Project | De-authorized Amount | Reason |
|---|---|---|
| Water Supply Financial Assistance Program – Charles County Water Supply System | $350,000 | The general obligation bonds were over seven years old, and the authorization was reverted at the end of fiscal 2017. |

Source: Department of Budget and Management, 2018 *Capital Improvement Program*

# *PAYGO Recommended Actions*

1. Concur with Governor's allowance of $110,400,000 in special funds and $33,000,000 in federal funds for the Water Quality Revolving Loan Fund.

2. Concur with Governor's allowance of $500,000 in general funds for the Hazardous Substance Clean-Up Program.

3. Concur with Governor's allowance of $16,880,000 in special funds and $10,300,000 in federal funds for the Drinking Water Revolving Loan Fund.

4. Concur with Governor's allowance of $70,000,000 in special funds for the Bay Restoration Fund – Wastewater Projects.

5. Concur with Governor's allowance of $15,000,000 in special funds for the Bay Restoration Fund – Septic Systems.

6. Concur with Governor's allowance of $8,000,000 in special funds for the Energy-Water Infrastructure Program.

# *GO Bond Recommended Actions*

1. Approve the Drinking Water Revolving Loan Fund authorization of $5,650,000 in general obligation bonds to finance drinking water projects.

2. Approve the Water Quality Revolving Loan Fund authorization of $13,200,000 in general obligation bonds to finance water quality improvement projects. This funding represents the 20% match to federal fiscal 2018 and 2019 funding.

3. Approve the Mining Remediation Program authorization of $500,000 in general obligation bonds to design, construct, and equip active and passive measures to remediate damage to water quality related to abandoned mining operations.

4. Approve the Water Supply Financial Assistance Program authorization of $3,303,000 in general obligation bonds for assistance to State and local government entities to acquire, design, construct, rehabilitate, equip, and improve water supply facilities.

5. Approve the de-authorization of $350,000 in general obligation bond authorization for the Water Supply Financial Assistance Program – Charles County Water Supply System project from fiscal 2011.

## Appendix 1
# Multiple Uses of Funding

**Table 1** shows the funding breakdown by project type for the projects funded in fiscal 2019. As can be seen, the overall funding for water quality projects is fairly split between the various project types. The largest water quality funding category is sewer projects in fiscal 2019, which is almost evenly split between the Water Quality Revolving Loan Fund (WQRLF) and the Bay Restoration Fund (BRF) – Wastewater Projects.

**Table 1**
**Multiple Uses of Funding**
**Fiscal 2019**

| | WQRLF | BRF –Wastewater Projects | Total |
|---|---|---|---|
| WWTP Major | $95,270,800 | $0 | $95,270,800 |
| WWTP Minor | 13,067,800 | 16,390,000 | 29,457,800 |
| Stormwater | 47,199,200 | 0 | 47,199,200 |
| Sewer | 58,247,372 | 53,610,000 | 111,857,372 |
| Other | 92,814,828 | 0 | 92,814,828 |
| **Total** | **$306,600,000** | **$70,000,000** | **$376,600,000** |

BRF: Bay Restoration Fund
WWTP: wastewater treatment plant
WQRLF: Water Quality Revolving Loan Fund

Source: Department of Legislative Services

## Multiple Sources of Funding

**Table 2** shows water quality-related project funding across programs. There are nine projects receiving multiple sources of funding (WQRLF or BRF) in fiscal 2019. **Table 3** shows drinking water-related project funding across programs for which there are three projects receiving both the Drinking Water Revolving Loan Fund and Water Supply Financial Assistance Program funding in fiscal 2019: North East Water Quality Improvements – Storage Tanks/Mixers; North East Water Quality Improvements – Treatment; and Wicomico Regional Airport Water Extension.

**Table 2**
**Water Quality-related Project Funding Across Programs**
**Fiscal 2019**
**($ in Thousands)**

| Subdivision | LD | Project Title | Estimated Cost | WQRLF | BRF | Total |
|---|---|---|---|---|---|---|
| Allegany | 1B | Bedford Road Sanitary Sewer Rehabilitation Phase VI | $1,000 | $125 | $875 | $1,000 |
| Allegany | 1B | Frostburg CSO Elimination Project, Phase IX-A Charles Street Corridor | 2,033 | 0 | 1,779 | 1,779 |
| Allegany | 1B | La Vale Basin 6 Sewer Improvements | 4,000 | 100 | 3,500 | 3,600 |
| Anne Arundel | 30B | Edgewater Beach Septic to Sewer Conversion Project | 8,844 | 5,355 | 3,140 | 8,495 |
| Anne Arundel | 21 | Piney Orchard WWTP ENR Upgrade | 4,915 | 0 | 1,830 | 1,830 |
| Baltimore | REG | Herring Run Sewershed Sewer Improvements – Part 2 Chinquapin Run (Part of SC-910) | 30,658 | 964 | 0 | 964 |
| Baltimore | REG | Herring Run Sewershed Sewer Improvements (Part of SC-965) | 14,506 | 350 | 0 | 350 |
| Baltimore | 6 | Construction Manager at Risk Back River Headworks Improvement (Part of SC-918) | 409,285 | 47,500 | 0 | 47,500 |
| Baltimore City | REG | Baltimore City Municipal Separate Storm Sewer System Program | 70,497 | 46,728 | 0 | 46,728 |
| Baltimore City | REG | Herring Run Sewershed Sewer Improvements – Part 2 Chinquapin Run (Part of SC-910) | 30,658 | 3,737 | 1,807 | 5,544 |
| Baltimore City | 6 | Construction Manager at Risk Back River Headworks Improvement (Part of SC-918) | 409,285 | 47,771 | 0 | 47,771 |
| Baltimore City | 43 | Herring Run Sewershed Collection System Improvements, Part 1 Sanitary Sewer (Part of SC-956) | 14,506 | 0 | 7,808 | 7,808 |
| Baltimore City | REG | Southwest Baltimore Sewer Improvement/Maidens Choice Assessment/Uplands Sewer Replacement (Part of SC-963) | 20,765 | 1,913 | 13,388 | 15,300 |
| Baltimore City | REG | Northeast Baltimore Sewer Improvements (Part of SC-965) | 20,993 | 1,901 | 13,309 | 15,210 |
| Calvert | 29C | Solomons WWTP ENR Upgrade | 9,390 | 3,007 | 0 | 3,007 |

| Subdivision | LD | Project Title | Estimated Cost | WQRLF | BRF | Total |
|---|---|---|---|---|---|---|
| Caroline | 36 | Caroline County Maryland Detention Center Pump Station Repair/Rehabilitation | 589 | 542 | 0 | 542 |
| Caroline | 36 | Denton Disinfection and System Upgrades | 1,929 | 1,329 | 0 | 1,329 |
| Caroline | 36 | Greensboro-Goldsboro Regional Wastewater Project, Phase 5 | 589 | 473 | 0 | 473 |
| Cecil | 36 | Chesapeake City WWTP BNR/ENR Upgrade | 9,842 | 0 | 2,720 | 2,720 |
| Cecil | 34A | Construct CECO Utilities, Inc. to Cherry Hill WWTP Connection | 2,850 | 2,850 | 0 | 2,850 |
| Cecil | 36 | Harbour View WWTP BNR/ENR Upgrade | 4,200 | 1,239 | 0 | 1,239 |
| Cecil | 34B | Holloway Beach Sewer Collection System | 2,630 | 1,220 | 1,380 | 2,600 |
| Cecil | 36 | Indian Acres Dam Repair | 599 | 542 | 0 | 542 |
| Cecil | 34B | Port Deposit WWTP Replacement | 10,700 | 7,020 | 3,680 | 10,700 |
| Cecil | 34B | Rock Run Sewer Extension | 1,250 | 1,250 | 0 | 1,250 |
| Frederick | 4 | Lewistown Wastewater Collection System | 985 | 0 | 985 | 985 |
| Frederick | 4 | Lewistown WWTP ENR Upgrade | 960 | 0 | 960 | 960 |
| Garrett | 1A | Deep Creek Lake WWTP ENR Upgrade | 20,009 | 0 | 7,200 | 7,200 |
| Howard | 13 | Ashleigh Knolls Shared Sewage Disposal Facility | 1,566 | 0 | 1,090 | 1,090 |
| Montgomery | REG | Sanitary Sewer Reconstruction – Cabin John Basin Montgomery County Section 2 | 5,278 | 5,278 | 0 | 5,278 |
| Montgomery | 16 | Sanitary Sewer Reconstruction – Little Falls Basin Montgomery County Section 2 | 4,914 | 4,914 | 0 | 4,914 |
| Montgomery | REG | Sanitary Sewer Reconstruction – Muddy Branch Basin Montgomery County Section 2 | 5,824 | 5,824 | 0 | 5,824 |
| Montgomery | REG | Sanitary Sewer Reconstruction – Rock Creek Basin Montgomery County Section 2 | 4,901 | 4,901 | 0 | 4,901 |
| Prince George's | REG | Piscataway WWTP Bio Energy Project | 162,190 | 86,623 | 0 | 86,623 |
| Prince George's | 47A | Sanitary Sewer Reconstruction – Beaverdam Basin Prince George's County Section 2 | 4,758 | 4,758 | 0 | 4,758 |
| Prince George's | REG | Sanitary Sewer Reconstruction – Broad Creek Basin Prince George's County Section 2 | 5,200 | 650 | 4,550 | 5,200 |

| Subdivision | LD | Project Title | Estimated Cost | WQRLF | BRF | Total |
|---|---|---|---|---|---|---|
| Prince George's | REG | Sanitary Sewer Reconstruction – Lower Anacostia Basin Prince George's County Section 2 | 4,225 | 4,225 | 0 | 4,225 |
| Prince George's | REG | Sanitary Sewer Reconstruction – Sligo Creek Basin Prince George's County Section 2 | 4,576 | 4,576 | 0 | 4,576 |
| Queen Anne's | 36 | Barclay Sewer Development | 4,480 | 2,706 | 0 | 2,706 |
| Washington | 2C | Edgemont Reservoir Rehabilitation (Emergency Repair) Project | 5,750 | 5,650 | 0 | 5,650 |
| Wicomico | 37A | Salisbury City Service Center Comprehensive Environmental Site Design | 540 | 471 | 0 | 471 |
| Wicomico | 38B | Salisbury Sewer Extension – Mt. Hermon Road | 109 | 109 | 0 | 109 |
| **Total** | | | **$1,322,778** | **$306,600** | **$70,000** | **$376,600** |

BNR: Biological Nutrient Removal Program
BRF: Bay Restoration Fund
CSO: combined sewer overflow
ENR: enhanced nutrient removal
LD: legislative district
WQRLF: Water Quality Revolving Loan Fund
WWTP: wastewater treatment plants

Source: Maryland Department of the Environment

**Table 3**
**Drinking Water Quality-related Project Funding Across Programs**
**Fiscal 2019**
**($ in Thousands)**

| Subdivision | LD | Project Title | Estimated Cost | DWRLF | WSFA | Total |
|---|---|---|---|---|---|---|
| Allegany | 1B | Bedford Road Area Water – Phase I | $500 | $500 | $0 | $500 |
| Allegany | 1A | Frostburg Continuous Supply to Water Treatment Plant | 327 | 227 | 0 | 227 |
| Allegany | 1A | Westernport Water Distribution System Improvements – Phase IV | 2,500 | 2,500 | 0 | 2,500 |
| Anne Arundel | 30B | Edgewater Beach Petition | 3,844 | 3,844 | 0 | 3,844 |
| Baltimore | 40 | Druid Lake Tanks (Part of WC-1204) | 162,714 | 4,000 | 0 | 4,000 |
| Baltimore | 41 | Ashburton Reservoir Improvements (Part of WC-1211) | 150,200 | 3,346 | 0 | 3,346 |
| Baltimore City | 40 | Druid Lake Tanks (Part of WC-1204) | 162,714 | 6,830 | 0 | 6,830 |
| Baltimore City | 41 | Ashburton Reservoir Improvements (Part of WC-1211) | 150,200 | 3,346 | 0 | 3,346 |
| Calvert | 29C | St. Leonard Tower Well and Elevated Storage Tank | 2,886 | 2,293 | 0 | 2,293 |
| Caroline | 36 | Denton Water Main Replacements | 1,621 | 0 | 811 | 811 |
| Cecil | REG | North East Water Quality Improvements – Source | 141 | 0 | 35 | 35 |
| Cecil | REG | North East Water Quality Improvements – Storage Tanks/Mixers | 1,392 | 1,044 | 348 | 1,392 |
| Cecil | REG | North East Water Quality Improvements – Treatment | 56 | 42 | 14 | 56 |
| Talbot | 37B | Oxford Water Main Replacement | 2,461 | 2,461 | 0 | 2,461 |
| Talbot | 37B | Trappe Water Main Replacement | 1,191 | 0 | 596 | 596 |
| Wicomico | 38B | Delmar Poplar Street Water Main Replacement | 511 | 437 | 0 | 437 |
| Wicomico | 38A | Wicomico Regional Airport Water Extension | 3,480 | 1,960 | 1,500 | 3,460 |
| **Total** | | | **$646,738** | **$32,830** | **$3,303** | **$36,133** |

DWRLF: Drinking Water Revolving Loan Fund
LD: legislative district
WSFA: Water Supply Financial Assistance

Source: Maryland Department of the Environment

# Appendix 2
# Energy-Water Infrastructure Program Funding
## Fiscal 2018

| Applicant | Project Name | Project Description | Total Capital Cost | Current Annual Energy Usage (kWh) | 20% Reduction Target | Projected Annual Energy Usage (kWh) | Annual Energy Savings (kWh) | Annual Energy Savings (%) | Dollar Value of Annual Energy Savings at $0.10 per kWh | Expected Payback Time (Number of Years) | Fiscal 2018 Grant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Existing Pumps/Unit Process Energy Reduction Projects*** | | | | | | | | | | | |
| Town of Keedysville | Keedysville Water Storage Tank Heating Upgrades | Insulate water towers to heater usage. | $19,336 | 29,800 | 23,840 | 3,645 | 26,155 | 88% | $2,616 | 7.4 | $19,336 |
| Baltimore City | LED Lights for Montebello Filtration Plant | Retrofit light fixtures at Montebello with energy efficient. | 1,032,274 | 6,164,114 | 4,931,291 | 4,551,499 | 1,612,615 | 26% | 161,262 | 6.4 | 1,000,000 |
| Town of Betterton | Wastewater Pump Station 1 | Replace pump station. | 19,579 | 5,257 | 4,206 | 251 | 5,006 | 95% | 501 | 39.1 | 19,579 |
| Town of Thurmont | Thurmont WWTP Reactor Aeration Optimization | Replace oversized blowers to meet lower air demands. | 459,800 | 425,000 | 340,000 | 242,000 | 183,000 | 43% | 18,300 | 25.1 | 459,800 |
| Town of Emmitsburg | Creamery Road Pump Station Sustainability | Upgrades at pump station. | 221,907 | 171,648 | 137,318 | 111,572 | 60,076 | 35% | 6,008 | 36.9 | 221,907 |
| Town of Sharptown | Sharptown WWTP Blower Upgrades | Replace blowers at Sharptown WWTP. | 100,000 | 178,404 | 142,723 | 136,008 | 42,396 | 24% | 4,240 | 23.6 | 100,000 |
| City of Hagerstown | Mixer Motor Replacement | Replace mixers at WWTP. | 82,000 | 463,470 | 370,776 | 405,720 | 57,750 | 12% | 5,775 | 14.2 | 82,000 |
| ***Subtotal*** | | | ***$1,934,896*** | ***7,437,693*** | ***5,950,154*** | ***5,450,695*** | ***1,986,998*** | ***27%*** | ***$198,700*** | ***9.7*** | ***$1,902,622*** |

| Applicant | Project Name | Project Description | Total Capital Cost | Current Annual Energy Usage (kWh) | 20% Reduction Target | Projected Annual Energy Usage (kWh) | Annual Energy Savings (kWh) | Annual Energy Savings (%) | Dollar Value of Annual Energy Savings at $0.10 per kWh | Expected Payback Time (Number of Years) | Fiscal 2018 Grant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***New Unit Process Generating Alternate Source of Energy*** | | | | | | | | | | | |
| WSSC | Piscataway WWTP Bio-Energy CHP | Combined heat and power at Piscataway WWTP. | 37,000,000 | 26,499,000 | | 21,300,000 | | 80% | $2,130,000 | 17.4 | $3,000,000 |
| Somerset County | Princess Anne WWTP Solar | Solar power at Princess Anne WWTP. | 800,000 | 1,514,000 | | 410,625 | | 27% | 41,063 | 19.5 | 800,000 |
| Frederick County | Ballenger-McKinney WWTP Photovoltaic | Solar power at Ballenger-McKinney WWTP. | 2,000,000 | 11,215,178 | | 1,254,240 | | 11% | 125,424 | 15.9 | 2,000,000 |
| Cecil County | Membrane Building Northeast Advanced WWTP Photovoltaic | Solar power at Northeast Advanced WWTP. | 188,000 | 1,840,000 | | 80,500 | | 4% | 8,050 | 23.4 | 188,000 |
| ***Subtotal*** | | | ***$39,988,000*** | ***41,068,178*** | | ***23,045,365*** | | ***56%*** | ***$2,304,537*** | ***17.4*** | ***$5,988,000*** |
| **Total** | | | | | | | | | | | **$7,890,622** |

CHP: combined heat and power
kWh: kilowatt hour
LED: light-emitting diode
WSSC: Washington Suburban Sanitary Commission
WWTP: wastewater treatment plant

Source: Maryland Department of the Environment